

IN THE CLAIMS:

Please cancel Claims 2, 4, 14, 16, 26, 28, 38 and 40 without prejudice or disclaimer of subject matter.

Please amend Claims 1, 3, 5 to 13, 15, 17 to 25, 27, 29 to 37, 39 and 41 to 48 as follows. The claims, as pending in the subject application, read as follows:

1. (Currently Amended) A method of interpreting identifying and classifying data obtained from the analysis of nucleic acids, comprising the steps of:  
performing a gel electrophoresis process on nucleic acid material and generating a machine-readable image of results of the electrophoresis process, wherein the machine-readable image is in a spatial domain of size versus intensity obtaining the nucleic acid data in a spatial domain;  
executing a frequency transform on the spatial domain machine-readable image to transforming the nucleic acid data from the spatial domain machine-readable image to a frequency domain, thereby obtaining frequency coefficients corresponding to spatial domain values; and  
obtaining sequence data of the transformed data by executing a pattern-based classification data mining process on the transformed nucleic acid data frequency coefficients in order to distinguish alleles from background signals of PCR processing.

2. (Canceled)

3. (Currently Amended) A method according to Claim ~~[[2]]~~ 1, further comprising performing a normalization process on the spatial domain machine-readable image ~~data~~ prior to the transforming step.

4. (Canceled)

5. (Currently Amended) A method according to Claim 1, wherein the transforming step comprises subjecting the ~~nucleic acid data in the~~ machine-readable image to a Hadamard transform ~~to obtain the nucleic acid data in the~~ frequency domain.

6. (Currently Amended) A method according to Claim 1, wherein the transforming step comprises subjecting the ~~nucleic acid data in the~~ machine-readable image to a Fourier transform ~~to obtain the nucleic acid data in the~~ frequency domain.

7. (Currently Amended) A method according to Claim 1, wherein the transforming step comprises subjecting the ~~nucleic acid data in the~~ machine-readable image to a wavelet transform ~~to obtain the nucleic acid data in the~~ frequency domain.

8. (Currently Amended) A method according to ~~any one of Claims 5 to 7~~ Claim 1, further comprising performing a data reduction process on the frequency coefficients so as to reduce the number of frequency coefficients utilized in the

~~classification process wherein the transformation results in frequency coefficients and the data mining process is performed utilizing the frequency coefficients.~~

9. (Currently Amended) A method according to Claim ~~[[8]]~~ 1, wherein less than all of the frequency coefficients are used in the classification data mining process.

10. (Currently Amended) A method according to Claim 1, wherein the classification data mining process comprises processing the ~~transformed data~~ frequency coefficients in a connectionist neural network algorithm.

11. (Currently Amended) A method according to Claim 1, wherein the classification data mining process comprises processing the frequency coefficients in a feedforward, backpropagation connectionist algorithm.

12. (Currently Amended) A method according to ~~any one of Claims 5 to 7~~ Claim 1, wherein the classification data mining process comprises processing the frequency coefficients in a classification tree / rule induction (CART) algorithm.

13. (Currently Amended) An apparatus for ~~interpreting~~ identifying and classifying data obtained by analysis of nucleic acids, comprising:

a memory that stores executable process steps; and

a processor that executes the executable process steps, wherein the executable process steps comprise (a) ~~inputting nucleic acid data~~ generating a machine-readable image in a spatial domain of size versus intensity, the machine-readable image

being generated from results of a gel electrophoresis process performed on nucleic acid material, (b) executing a frequency transform on the spatial domain machine-readable image to transform~~[[ing]] the nucleic acid data from~~ the spatial domain machine-readable image to a frequency domain, thereby obtaining frequency coefficients corresponding to spatial domain values, and (c) obtaining sequence data of the data of the nucleic acid data by executing a pattern-based classification data mining process on the transformed nucleic acid data frequency coefficients in order to distinguish alleles from background signals of PCR processing.

14. (Canceled)

15. (Currently Amended) An apparatus according to Claim ~~[[14]]~~ 13, further comprising performing a normalization process on the spatial domain machine-readable image data prior to the transforming step.

16. (Canceled)

17. (Currently Amended) An apparatus according to Claim 13, wherein the transforming step comprises subjecting the ~~nucleic acid data in the~~ spatial domain machine-readable image to a Hadamard transform ~~to obtain the nucleic acid data in the~~ frequency domain.

18. (Currently Amended) An apparatus according to Claim 13, wherein the transforming step comprises subjecting the ~~nucleic data in the spatial domain~~ machine-readable image to a Fourier transform ~~to obtain the nucleic data in the frequency domain~~.

19. (Currently Amended) An apparatus according to Claim 13, wherein the transforming step comprises subjecting the ~~nucleic acid data in the spatial domain~~ machine-readable image to a wavelet transform ~~to obtain the nucleic acid data in the frequency domain~~.

20. (Currently Amended) An apparatus according to ~~any one of Claims 17 to 19~~ Claim 13, further comprising performing a data reduction process on the frequency coefficients so as to reduce the number of frequency coefficients utilized in the classification process ~~wherein the transformation results in frequency coefficients and the data mining process is performed utilizing the frequency coefficients~~.

21. (Currently Amended) An apparatus according to Claim ~~[[20]]~~ 13, wherein less than all of the frequency coefficients are used in the ~~data mining~~ classification process.

22. (Currently Amended) An apparatus according to Claim 13, wherein the ~~data mining~~ classification process comprises processing the ~~transformed data~~ frequency coefficients in a connectionist neural network algorithm.

23. (Currently Amended) An apparatus according to Claim 13, wherein the ~~data mining~~ classification process comprises processing the frequency coefficients in a feedforward, backpropagation connectionist algorithm.

24. (Currently Amended) An apparatus according to ~~any one of Claims 17 to 19~~ Claim 13, wherein the ~~data mining~~ classification process comprises processing the frequency coefficients in a classification tree / rule induction (CART) algorithm.

25. (Currently Amended) Computer-executable process steps for ~~interpreting~~ identifying and classifying data obtained by analysis of nucleic acids, the executable process steps comprising:

~~inputting nucleic acid data~~ generating a machine-readable image in a spatial domain of size versus intensity, the machine-readable image being generated from results of a gel electrophoresis process performed on nucleic acid material;

executing a frequency transform on the spatial domain machine-readable image to transforming the input nucleic acid data from the spatial domain machine-readable image to a frequency domain, thereby obtaining frequency coefficients corresponding to spatial domain values; and

~~obtaining sequence data of the data of the nucleic acid data by executing a pattern-based classification data mining process on the transformed nucleic acid data~~ frequency coefficients in order to distinguish alleles from background signals of PCR processing.

26. (Canceled)

27. (Currently Amended) Computer-executable process steps according to Claim [[26]] 25, further comprising performing a normalization process on the spatial domain machine-readable image data prior to the transforming step.

28. (Canceled)

29. (Currently Amended) Computer-executable process steps according to Claim 25, wherein the transforming step comprises subjecting the ~~nucleic acid data in the spatial domain~~ machine-readable image to a Hadamard transform ~~to obtain the nucleic acid data in the frequency domain.~~

30. (Currently Amended) Computer-executable process steps according to Claim 25, wherein the transforming step comprises subjecting the ~~nucleic acid data in the spatial domain~~ machine-readable image to a Fourier transform ~~to obtain the nucleic acid data in the frequency domain.~~

31. (Currently Amended) Computer-executable process steps according to Claim 25, wherein the transforming step comprises subjecting the ~~nucleic acid data in the spatial domain~~ machine-readable image to a wavelet transform ~~to obtain the nucleic acid data in the frequency domain.~~

32. (Currently Amended) Computer-executable process steps according to ~~any one of Claims 29 to 31~~ Claim 25, further comprising performing a data reduction process on the frequency coefficients so as to reduce the number of frequency coefficients

~~utilized in the classification process wherein the transformation results in frequency coefficients and the data mining process is performed utilizing the frequency coefficients.~~

33. (Currently Amended) Computer-executable process steps according to Claim ~~[[32]]~~ 25, wherein less than all of the frequency coefficients are used in the ~~data mining~~ classification process.

34. (Currently Amended) Computer-executable process steps according to Claim 25, wherein the ~~data mining~~ classification process comprises processing the frequency coefficients ~~transformed data~~ in a connectionist neural network algorithm.

35. (Currently Amended) Computer-executable process steps according to Claim 25, wherein the ~~data mining~~ classification process comprises processing the frequency coefficients in a feedforward, backpropagation connectionist algorithm.

36. (Currently Amended) Computer-executable process steps according to ~~any one of Claims 29 to 31~~ Claim 25, wherein the ~~data mining~~ classification process comprises processing the frequency coefficients in a classification tree/ rule induction (CART) algorithm.

37. (Currently Amended) A computer-readable medium which stores computer-executable process steps for interpreting identifying and classifying data obtained by analysis of nucleic acids, the computer-executable process steps comprising:



~~inputting nucleic acid data in~~ generating a machine-readable image in a spatial domain of size versus intensity, the machine-readable image being generated from results of a gel electrophoresis process performed on nucleic acid material;

executing a frequency transform on the spatial domain machine-readable image to transforming the input nucleic acid data from the spatial domain machine-readable image to a frequency domain, thereby obtaining frequency coefficients corresponding to spatial domain values; and

~~obtaining sequence data of the nucleic acid data by~~ executing a pattern-based classification data mining process on the transformed nucleic acid data frequency coefficients in order to distinguish alleles from background signals of PCR processing.

38. (Canceled)

39. (Currently Amended) A computer-readable medium according to Claim [[38]] 37, further comprising performing a normalization process on the spatial domain machine-readable image data prior to the transforming step.

40. (Canceled)

41. (Currently Amended) A computer-readable medium according to Claim 37, wherein the transforming step comprises subjecting the ~~nucleic acid data in the spatial domain machine-readable image~~ to a Hadamard transform ~~to obtain the nucleic acid data in the frequency domain.~~

42. (Currently Amended) A computer-readable medium according to Claim 37, wherein the transforming step comprises subjecting the ~~nucleic acid data in the~~ spatial domain machine-readable image to a Fourier transform ~~to obtain the nucleic acid data in the frequency domain.~~

43. (Currently Amended) A computer-readable medium according to Claim 37, wherein the transforming step comprises subjecting the ~~nucleic acid data in the~~ spatial domain machine-readable image to a wavelet transform ~~to obtain the nucleic acid data in the frequency domain.~~

44. (Currently Amended) A computer-readable medium according to any ~~one of Claims 41 to 43~~ Claim 37, further comprising performing a data reduction process on the frequency coefficients so as to reduce the number of frequency coefficients utilized in the classification process ~~wherein the transformation results in frequency coefficients and the data mining process is performed utilizing the frequency coefficients.~~

45. (Currently Amended) A computer-readable medium according to Claim ~~[[44]]~~ 37, wherein less than all of the frequency coefficients are used in the ~~data mining~~ classification process.

46. (Currently Amended) A computer-readable medium according to Claim 37, wherein the ~~data mining~~ classification process comprises processing the ~~transformed data~~ frequency coefficients in a connectionist neural network algorithm.

47. (Currently Amended) A computer-readable medium according to Claim 37, wherein the ~~data mining~~ classification process comprises processing the frequency coefficients in a feedforward, backpropagation connectionist algorithm.

48. (Currently Amended) A computer-readable medium according to ~~any one of Claims 41 to 43~~ Claim 37, wherein the ~~data mining~~ classification process comprises processing the frequency coefficients in a classification tree/ rule induction (~~CART~~) algorithm.